



Use the Surface of Revolution Tool

INTRODUCTION

EnSight provides a surface of revolution specification tool called the “Revolution” tool. When visible, the Revolution tool appears as a (typically white) icon with a line running down the center axis. By default, the distance of five planar points from the central axis defines the profile curve of the revolution surface (although you can add points up to a maximum of ten). The Revolution tool is used to supply EnSight with a surface of revolution specification, for example to specify the location for a revolution clip or cut.

BASIC OPERATION

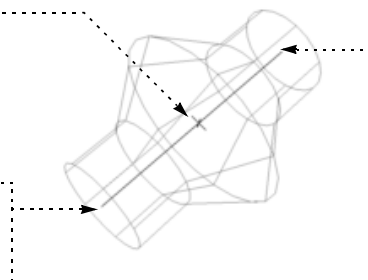
In many cases, the Revolution tool will automatically turn on when performing some function that requires it. You can also turn the tool on and off manually by toggling Tools > Quadric > Revolution. The Revolution tool can be placed in two ways: interactively through direct manipulation of tool “hotpoints” with the mouse or precisely positioned by typing coordinates into a dialog.

To move the Revolution tool with the mouse:

1. Place the mouse pointer over the center of the tool.
2. Click (and hold) the left mouse button.
3. Drag the tool to the desired location.
4. Release the mouse button.

To reorient the Revolution tool with the mouse:

1. Place the mouse pointer over either of the center line's endpoints.
2. Click (and hold) the left mouse button.
3. Drag the endpoint to achieve the desired orientation.
4. Release the mouse button.



Revolution tool moving and stretching is restricted to the plane perpendicular to your line of sight. If you need to move the Revolution tool in another plane, rotate the model such that the desired translation plane is perpendicular to your new line of sight. (Note that the Revolution tool will not exactly track the location of the mouse pointer.)



To set the Revolution tool by specifying coordinates:

1. Open the Transformations dialog by clicking Transf. Edit... on the desktop.

2. Select Editor Function > Tools > Revolution.

The dialog displays the profile curve as a series of connected line segments with stars positioned at the curve points. You can edit the curve by clicking and dragging the points or by manually entering distance-radius pairs. You can also add or delete points. As you make changes, the tool in the graphics window updates interactively.

To edit points with the mouse:

1. Click on the point and drag to the desired location.

To add points (up to a maximum of 10):

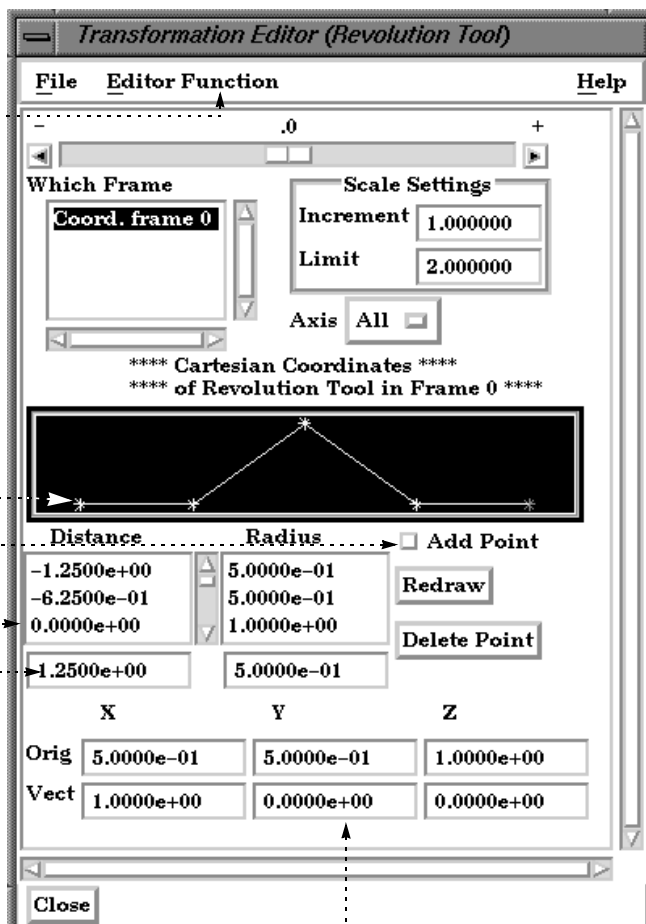
1. Click Add Point.
2. Move the mouse pointer into the curve window and click the left mouse button in the location of the desired new point. Clicking Delete Point will remove the currently selected point.

To manually edit a point:

1. Click the point (to select it) in the curve window or click the desired point in either the Distance or Radius lists.
2. The distance and radius of the selected point are shown in the text fields below each list.
3. Edit the point's distance and/or radius value and press return.

To edit the position or orientation:

1. Enter the desired coordinates for the Origin (location of the axis center point) or Axis (direction vector) and press return.



You can also translate the Revolution tool by setting the desired axis of translation in the Axis option menu and manipulating the slider bar. In this case, the values in the "Scale Settings" section control the sensitivity and limit of the slider action.

Note that you can also use this dialog to view (rather than set) the position of the Revolution tool since the numeric values always update to reflect the current location. If you are positioning the Revolution tool interactively with the mouse, the values will update when the mouse button is released.



ADVANCED USAGE

After a model has been loaded, the initial location of the Revolution tool center is set to the “look-at” point – the geometric center of all visible geometry and aligned with the X axis. The coordinates of the Revolution tool are specified with respect to the default frame: frame 0. However, if you have created additional [frames](#), you can position the Revolution tool relative to the origin of a different frame. This is accomplished by selecting the desired frame in the “Which Frame” list in the Transformations dialog.

You can easily reset the position and orientation of the Revolution tool to the default. See [How To Reset Tools and Viewports](#) for more information.

Positioning a 3D tool with a 2D device (the mouse) can be difficult. Multiple [viewports](#) are sometimes helpful in positioning tools since you can see the tool simultaneously from multiple vantage points.

SEE ALSO

Other tools: [Cursor](#), [Line](#), [Plane](#), [Cylinder](#), [Sphere](#), [Cone](#). See the How To article on [Frames](#) for additional information on how frames effect tools.